

WHAT IS CLAIMED IS:

1. A DC-DC converter comprising:
 - a series circuit formed by an inductor and a capacitor, an output voltage for a load being tapped off across the capacitor and the load bringing about a load current;
 - a changeover switch for alternately connecting an input voltage to the series circuit or for short-circuiting the series circuit;
 - a control circuit for controlling the changeover switch in such a way that the changeover switch alternately short-circuits the series circuit or connects it to the input voltage; and
 - means for increasing a resistance in series with the series circuit at least in the event of the series circuit being short-circuited by means of the changeover switch, if the load current falls by a specific value.
2. The DC-DC converter of claim 1, wherein the changeover switch has a push-pull output stage with first and second transistors, wherein the first transistor is provided for connecting the input voltage to the series circuit and the second transistor is provided for short-circuiting the series circuit.
3. The DC-DC converter of claim 2, wherein the second transistor is provided as the means for increasing the resistance in series with the series circuit, and the second transistor is controlled into a less conductive state by the control circuit.
4. The DC-DC converter of claim 2, wherein the second transistor is a metal oxide semiconductor field-effect transistor.
5. The DC-DC converter of claim 2, wherein the second transistor is a junction field-effect transistor.

6. The DC-DC converter of claim 2, wherein the second transistor is provided as the means for increasing the resistance in series with the series circuit, the second transistor being controlled into the off state by the control circuit.
7. The DC-DC converter of claim 1, wherein a third transistor is provided as the means for increasing the resistance in series with the series circuit, said third transistor being controlled from the conductive state into a less conductive state when a load current decrease occurs.
8. The DC-DC converter of claim 7, wherein the third transistor is controlled by a monitoring device, which evaluates the load current.
9. The DC-DC converter of claim 1, wherein the load current is evaluated by the control device.
10. A DC-DC converter comprising:
 - a series circuit formed by an inductor and a capacitor, an output voltage for a load being tapped off across the capacitor and the load bringing about a load current;
 - a changeover switch for alternately connecting an input voltage to the series circuit or for short-circuiting the series circuit;
 - a control circuit for controlling the changeover switch in such a way that the changeover switch alternately short-circuits the series circuit or connects it to the input voltage; and
 - a control transistor that increases a resistance in series with the series circuit at least when the series circuit is short-circuited by the changeover switch, if the load current falls by a specific value.
11. The DC-DC converter of claim 10, wherein the changeover switch has a push-pull output stage with first and second transistors, wherein the first

transistor is provided for connecting the input voltage to the series circuit and the second transistor is provided for short-circuiting the series circuit.

12. The DC-DC converter of claim 11, wherein the second transistor is provided as the control transistor for increasing the resistance in series with the series circuit, and the second transistor is being controlled into a less conductive state by the control circuit.

13. The DC-DC converter of claim 11, wherein the second transistor is a metal oxide semiconductor field-effect transistor.

14. The DC-DC converter of claim 11, wherein the second transistor is a junction field-effect transistor.

15. The DC-DC converter of claim 11, wherein the second transistor is provided as the control transistor for increasing the resistance in series with the series circuit, the second transistor being controlled into the off state by the control circuit.

16. The DC-DC converter of claim 10, wherein a third transistor is provided as the control transistor for increasing the resistance in series with the series circuit, said third transistor being controlled from the conductive state into a less conductive state when a load current decrease occurs.

17. The DC-DC converter of claim 16, wherein the third transistor is controlled by a monitoring device, which evaluates the load current.

18. The DC-DC converter of claim 10, wherein the load current is evaluated by the control device.